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Side-by-side: A Pedagogical Basis for (Design) Transdisciplinarity

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Abstract: *In this paper, a pedagogical model for fostering transdisciplinarity in the built environment is described. Unlike learning situations in design education which use multidisciplinary teams, this model is characterised by students working side-by-side on the same project each producing their own proposal. As is explained, the development of this model was inspired by a growing awareness of the need to look beyond discipline boundaries in order to more effectively address issues involving the design of the built environment; issues associated with a rapidly changing and increasingly technologically complex world. In this respect, transdisciplinarity formed the philosophical and theoretical basis for the development and implementation of a cross-discipline studio elective for architecture and interior design students from years three to six in their course. While there are limitations with the model, the evaluation reveals insights into how we might continue with constructing more appropriate learning opportunities for engendering transdisciplinary attitudes in students and graduates.*

Keywords: *Architecture; Interior Design; Cross-disciplinarity; Transdisciplinarity*

Introduction

This paper describes the development, implementation and evaluation of a design studio elective by the authors Professor Steffen Lehmann (Coordinator of Architecture) and Associate Professor Jill Franz (Coordinator of Interior Design). Unlike cross-disciplinary studios that involve students from various disciplines working in teams to produce joint proposals, in this elective, students of architecture and interior design worked side-by-side on the same project with common aims and objectives producing their own individual proposal. The intention here was to provide a communal and 'co-operative' (Wright & Lander, 2003) as opposed to 'collaborative' environment; the latter commonly being associated with team work. While we recognise the need for students to learn how to work in a team, we were more concerned in this case with challenging them to move conceptually beyond their discipline boundary to a situation reflecting the 'holistic reality of the world' (Klein, date unknown) and the limitations of discipline compartmentalised knowledge; limitations we argue exist even with multidisciplinary approaches.

The impetus for review and development

The catchcry at the moment in Australian higher education is 'collaboration'. For the most part, this appears to us to be underpinned almost exclusively by the desire to use resources in the most efficient way possible rather than by an explicit acknowledgement that world issues are highly complex and ill-defined; issues that not only require multiple perspectives but an overarching framework developed via 'new modes of knowledge production' (Klein). Where design schools have recognised the need to introduce a more integrated curriculum, from our observations this has been rather piecemeal and not explicitly informed by theory,

particularly overarching transdisciplinary theory. According to Cys & Ward (2003), '[T]he existing literature describing collaborative architecture and interior design studio pedagogy is sparse, suggesting that collaboration between the disciplines is assumed to occur more than it actually does. The majority of the published material in this area describes collaboration in studio projects predominantly in terms of the problematic nature of teamwork and communication between students from the two disciplines' (pp. 5-6). They go on to cite an IDEA (Interior Design/Interior Architecture Educators' Association of Australia and New Zealand) 2003 survey which revealed that: out of ten of the eleven undergraduate interior design programmes in Australia and New Zealand that are members of IDEA, only two programmes offered upper level collaborative architecture and interior design studios on a regular basis (Cys & Ward, 2003, p. 6). They proposed that this may in part be due to the closeness of the professions and '...what might be termed a current condition of territorial imperative' (p. 7).

In exploring initiatives that have encouraged students to step beyond their professional territory, Cys & Ward (2003) described a project by Jennifer Magee where teams of interior design and architecture students worked together on an urban design project. The main outcome reported here was an appreciation of other ways of designing (Magee, 2000 in Cys & Ward, 2003). An appreciation of other discipline ways of designing is, we believe, useful in the process towards an understanding of design in transdisciplinary terms. However, there is a problem, as we conceive it, in the framing of the project as an 'urban design' activity. As the following section will highlight, a transdisciplinary approach demands that the issue of focus be related to the world rather than to a specific discipline or even collaborative effort by several disciplines.

Theoretical background

In this paper, cross-disciplinarity is used in a generic way to describe various forms of discipline interaction including those of an interdisciplinary and multidisciplinary as well as transdisciplinary nature. Because of the tendency to confuse these terms, it is important to highlight the distinctions as we understand them before proceeding further.

As noted by Nicolescu (1997), 'interdisciplinarity' 'concerns the transfer of methods from one discipline to another' (p. 1), or as described by Geisler (2002), the 'borrowing [of] ... techniques, values, or mandates of a nearby discipline in order to address pressing problems' (p. 9). Interior designers, for example, borrow, through the process of consultancy, the mandate of architects or engineers when their 'interior' work has structural implications that are outside their field of expertise or authority. Another example from the educational context is a collaborative studio developed by the architectural author of this paper where five teams of eleven architecture students each consulted with a civil engineering student on a project involving the design of selected Brisbane bridges. This form of interdisciplinary collaboration is illustrated in Figure 1.

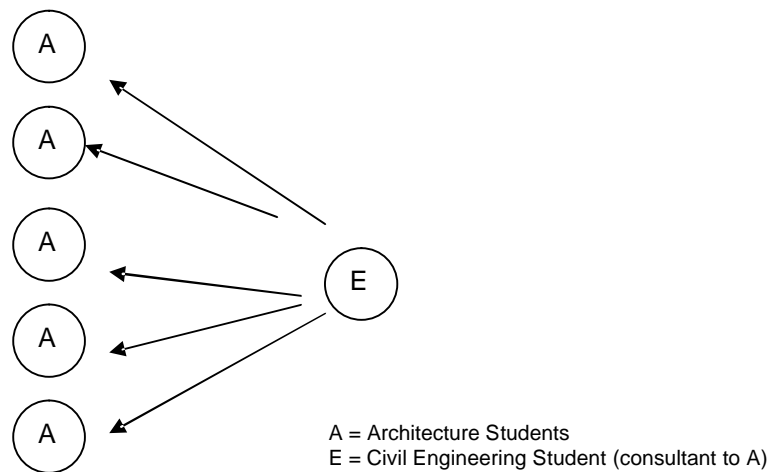


Figure 1: Interdisciplinary Collaboration Model (Lehmann, 2003).

As an alternative, a 'multidisciplinary' approach is characterised by a co-contribution to a project by various disciplines. Sometimes, this is nothing more than a sequential process where 'one discipline accepts the product of the first as a given and works with it from there' (Geisler, 2002, p. 12). This is exemplified in situations where interior designers are employed to select furniture, fittings, furnishings and finishes after decisions have been made usually by architects about form and spatial arrangement. Sometimes, however, representatives from various disciplines start working on the same project at its inception. Here, all viewpoints are presented up-front where they are explained and debated and hopefully respected for their unique view of the situation. By its very definition, there is an acceptance that project members cannot have mutual understanding of the specialised knowledge, skills and cultural values of all disciplines. Collaboration in this sense means trying to make this interrelationship work, '...of always assuming a fundamental respect for each other and each other's disciplinary bases; of taking up the burden of making or explaining and persuading others of one's disciplinary conclusions; of forgoing the opportunity for disciplinary silence and retreat when asked to explain ourselves' (Geisler, 2002, p. 12). A collaborative project, also an initiative of the architectural author, illustrates this (Figure 2). The project involved teams of one architecture student and one art student from another university collaborating to produce a site-specific installation for a particular public space in Brisbane.

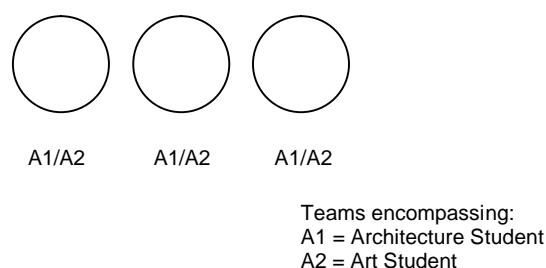


Figure 2: Multidisciplinary Collaboration Model (Lehmann, 2003).

While different in the sense described, interdisciplinarity and multidisciplinary are similar in that their goals always remain within the framework of the discipline (Nicolescu, 1997), that is, the autonomy of each discipline usually remains in tact.

This is unlike 'transdisciplinarity' where the concern is '...that which *is* at once *between* the disciplines, *across* the disciplines, and *beyond* all discipline. Its goal is *the understanding of the present world*, of which one of the imperatives is the unity of knowledge' (Nicolescu, 1997, p. 2). As mentioned before, transdisciplinarity recognises the holistic reality of the world and the associated need to deal with this complexity, heterogeneity and hybridity by focusing beyond the discipline to the development of an overarching framework (Klein). For the purist transdisciplinarians, the discourse should be one that allows relationships to be drawn between, among and, most significantly, beyond other discourses. It is in this respect 'overarching'.

As Klein reminded us, some disciplines already have strong cross-disciplinary character. While she cited philosophy as an example, we suggest that design represents another example. Despite designers recognising the holistic nature of the issues they deal with, cross-disciplinarity where it occurs, remains at the interdisciplinary and multidisciplinary levels. In the elective described here the intention was to explore the possibility of design as a transdisciplinary medium and of how we might structure learning environments to engender a transdisciplinary attitude in students.

The elective – 'Inside of Outside: redefining the Australian beach house'

As mentioned previously, the elective was not collaborative in the sense of students working together to produce a joint proposal. Rather they worked communally in a studio environment on a project that actively sought their cooperation in breaking down the boundaries between the disciplines of interior design and architecture inviting in the process a view across and beyond each discipline (Figure 3).

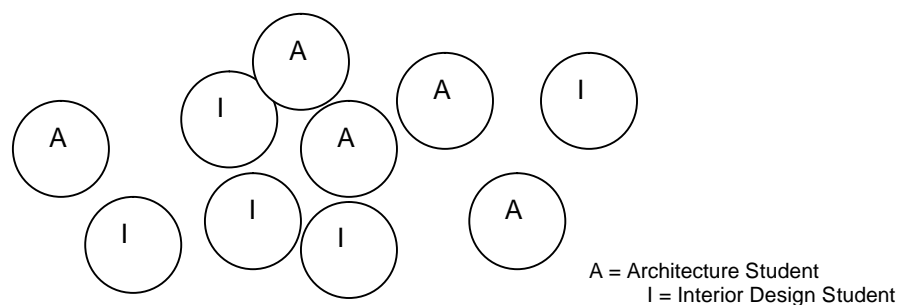


Figure 3: Transdisciplinary Encounter Model (© Franz & Lehmann 2004).

The philosophical tenets of the elective

Before describing the elective, it is important to explain the pedagogic ground for situating it within the context of a design studio. It is important for several reasons. First, problems in team teaching often relate to the parties having differing sometimes conflicting conceptions of teaching and learning. Second, the transdisciplinary attitude depends on having an epistemology and ontology of the world that is holistic and overarching. As such, the development of the task and the learning environment had to be compatible as well as, for want of a better description, universal or all-encompassing. In this philosophical sense, a studio project developed from an interpretive position seemed to offer the most potential.

From an interpretive position, people and environment are understood to mutually include and define each other (Bognar, 1985). Ontologically, then, experience is regarded as a 'relationship between subject and object, encompassing both' (Marton, 1994, p. 91). And from such a position, knowledge is viewed as being constituted in and through action within a context involving some 'one' and some 'thing'. In summary, an interpretive position is underpinned by the assumption that there are multiple factors contributing to an event, action, and understanding and that instead of one reality there are various multifaceted realities (Candy, 1984, p. 4). Such a multifaceted reality is not served well by a compartmentalised discipline approach despite respective disciplines' depth of knowledge. As conveyed earlier, the goal of transdisciplinarity is a holistic understanding of the present world, of which unity of knowledge is one of the imperatives (Nicolescu, 1997, p.2). In line with this view is an understanding of learning as an activity integrally tying together content and approach. At its optimum, learning is the ability of the person to change this orientation to achieve effective, efficient and ethical outcomes (Franz, 2003). In a transdisciplinary sense, changing one's orientation means being able to appreciate the limitations as well as the potential of a specific discipline, of being prepared to transcend the confines of the discipline by seeking the cooperation of others in employing and preserving plurality and relationality rather than seeking conformity, universality and certainty, concepts emphasised by Klein as qualifying the character of transdisciplinarity. Developing the ability to do this involves attitudinal as well as conceptual change; it is something more than memorisation, acquiring new knowledge and developing discipline-specific skills. Likewise, teaching (lecturing and tutoring) is something more than transmission and encouragement. It is facilitating conceptual and attitudinal change to the level where the student becomes an independent and critical learner explicitly aware of the complex, relational and qualitative nature of the world and of the need to orientate themselves in different ways to the issue at hand (Franz, 2003).

In this respect, the design studio can play an integral role. The speculative, heuristic and reflective nature of designing demands that content is presented and engaged within a praxis situation. Studios which involve students in working on simulated or real-life scenarios play a vital role in helping them develop a holistic appreciation of the world including the role of design in addressing world related issues such as dwelling and habitation. The projects of the studio constitute conceptual wholes giving students the opportunity to move iteratively between parts and the whole, between the act and the content of learning (Franz, 2003). Projects connect with practice, the professions and the community engendering enculturation and the associated chance not only to learn the discipline's discourse through the playing out of roles but also to acknowledge its limitations. The nature of this learning demands group and one-to-one interaction between students and students, and students and educators (Franz, 2003). Physically, the studio can be formal or informal providing for different types of interaction. In line with the tenets of transdisciplinarity, the studio is a construct that acknowledges the need to supplant isolated modes of work with affiliations, coalitions and alliances (Klein, p. 25). As current practice shows, however, the studio and project-based design alone do not guarantee a transdisciplinary approach or outcome. Rather it is their structure that plays a central role.

The structure of the elective and its learning environment

The transdisciplinary studio was offered as an elective to give students the choice of participating. It was decided to open the elective to students in the later years of their architecture and interior design programmes mainly because they would have an understanding of their own discipline's discourse and roots. This may seem contradictory but for us one has to know what one's discipline is to be able to transcend it. It was also decided to limit the number of students in the class to ten, five students from architecture and five students from interior design. This was to attempt to minimise the influence of student numbers on the quality of student performance providing for a less implicated understanding of the relationship between the student and the transdisciplinary task. The process of selecting students involved two phases. In phase one, we identified students who had performed well throughout their course, informed them of the elective and invited them to an interview. In phase two, we interviewed interested students and on the basis of the interview selected five students from each discipline. We conducted the interviews jointly and made decisions together about the student's design ability, level of confidence, and preparedness to move beyond their discipline boundary. At the conclusion of this process, the student cohort for the elective comprised three third year interior design students (female), one fourth year interior design student (male), two fourth year architecture students (female and male), two fifth year architectural students (male and female), and one sixth year architectural student (male).

Figure 4 depicts the structure of the elective studio as two axes, a horizontal across-disciplinary axis and a vertical across-year axis. Sometimes referred to as 'vertical studios', the idea here was to encourage boundary crossing; to have a non-differentiated hybrid group of students; heterogeneity as opposed to homogeneity, as is the case in a complex, multidimensional world.

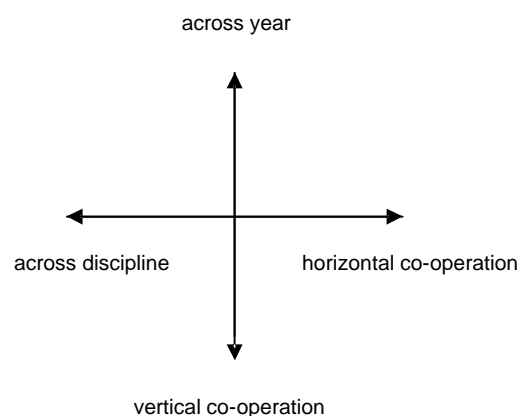


Figure 4: Structure of the elective studio.

Another decision we made was to have each student working individually and parallel on the same project rather than in teams. This was mainly to encourage students to focus on the issue beyond their own discipline rather than being side-tracked by the dynamics of working in a team and the associated tendency to reinforce boundaries in order to protect discipline interests and reinforce its autonomy and authority.

According to Wright and Lander (2003), 'even when students are in mixed cultural groups there can be little assurance of profitable intercultural interaction because of the dominance of one cultural group' (p. 239). The other side of the coin, however, is that group work being an encounter of different cultures does encourage the development of skills distinct from working in culturally homogeneous groups (Wright & Lander, 2003, p. 239), skills which facilitate moving beyond a discipline. Just as importantly, it helps reveal assumptions that are deeply embedded within the culture of a discipline (Wright & Lander 2003, p. 239) providing a basis for questioning the influence of these on developing a holistic appreciation of a situation. Recognising these points, we attempted to allow students to 'encounter' each other's discipline and their own biases by having them work side-by-side in the same studio at the same time, in a situation of open dialogue and social interaction.

The elective was conducted one evening per week for three hours over a period of thirteen weeks. We contributed equally to the lecture content and undertook both joint and individual tutorial sessions with all students in the same room. Four guest lectures were incorporated that dealt with issues beyond but related to the project, issues such as landscape architecture, urban design, graphic design, and subtropical design. Students were encouraged to draw on each others' knowledge and experience in the process describing and explaining their schemes to each other. Informal social interaction was also encouraged through a relaxed and flexible studio setting that had tea and coffee making facilities. In hindsight it may have been more symbolically appropriate to have the class in a neutral environment although the interior design studio selected was appropriate to the size of the group, providing the facilities and flexibility required. Any references to it as belonging to a specific discipline (such as posters, student work from other classes) were removed. We were also cognisant of being completely open and critical of our own biases, attempting to move beyond our own disciplines through the use of references, comments, and examples outside our associated discipline. This was aided by our personal experience of working across boundaries both in design as well as in the social sciences and the humanities. The end of semester presentation incorporated a critique by academics and practitioners from architecture and interior design. Again in hindsight, this should have been extended to include people representing various interests in the community as well as other disciplines informing person-environment interaction and issues at a global level.

The project and its site

The substantive focus of the elective was the redefinition of the Australian beach house. The redefinition aspect was an invitation to students to go beyond discipline constrained stereotypical examples of beach house design in Australia particularly in South-East Queensland. To encourage this, students were presented with an existing proposal for the site that challenged current trends in a tectonic way using heavy weight concrete instead of light-weight timber and steel (Figure 5). This was based on the assumption that order, stability and permanence would help to develop a refreshing antithesis to the dominating mainstream of light-weight coastal architecture (Lehmann in Lehmann & Franz, 2004). They were also encouraged to explore other ways in which this could be approached such as using sustainability as an underpinning theme and integrating this with a more critical examination of socio-cultural factors such as: regionalism/globalisation, localism and identity, and related issues of disconnection, displacement, disempowerment and alienation; technology

and separation of action and outcome, time and space; consumerism especially its connection to individualism and lifestyle and their paradoxical relationship with conformity; and change and rate of change (Day, 2002). Philosophically, the students were asked to externalise their own ontological position pertaining to the relationship between people and environment, the role of design and designer, and interior designer and architect. Students were asked to consider dwelling as being at 'the inside of the outside'; of conceiving of the building envelope as a construct rather than something physical that conventionally differentiates the roles of interior designer and architect.

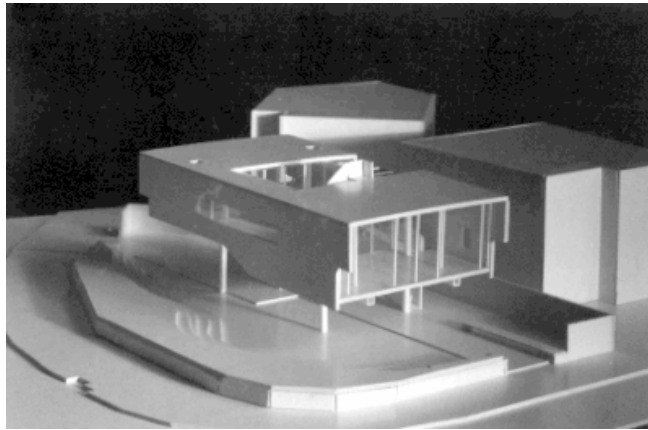


Figure 5: Model of the proposal previously developed for the clients (Lehmann, 2003).

Students were given a real vacant site on a corner block behind dunes and ocean (Figure 6) with real clients (Steffen Lehmann and his partner) and were challenged to think experimentally about the project and the outcome. Steffen's partner is a Brazilian graphic designer and installation artist and was keen for the students to exploit the art aspect of architecture and design particularly its symbolic and open-ended qualities. Gender also provided another source of development. The students were reminded that in architectural history female clients have been central to major changes in residential design challenging cultural assumptions and architectural convention producing in the process a redefinition of domesticity as spatial, physical and experiential. For this, the houses of Lina Bo Bardi and Frida Kahlo were studied. The students were also aware of the clients' desire for the house to clearly reflect the qualities of a weekender, not a permanently used retreat.



*Figure 6: Project site, Sunshine Coast, Queensland
(Photography: Interior Design Author).*

All students regardless of their discipline were required to design for the site producing amongst other possibilities a site plan showing the footprint of the building as well as landscaping, floor plans, external elevations, sections and internal elevations, detailed drawings of interior elements, perspectives and a three dimensional model. As well as considering the building's form and materiality, students were also asked to focus on interior finishes, fittings, furniture and furnishings. They were asked to address practical, instrumental, psycho-social and existential forms of interaction thinking about the broader social, physical and temporal context as well as the site specific and local context. We also identified several local and international architectural and interior design projects for consideration, discussion and debate. We provided students with literature dealing with home, interiority and the inside/outside binary structure with its associated notions of boundary, margin and liminality. We encouraged them to identify other binaries such as sea/land and working day/weekend. Considered as 'wholes', binaries are very effective devices for exploring issues and tensions and extending the potential for innovative holistic thinking.

The elective as a site for research

A complex and dynamic world demands that our practice be more systematic, rigorous, and ethical; and that teaching, research and application be integrated producing what Clark (1998) described as 'pathways of transformation'. This combined with the experimental nature of the unit required that we also conceptualised the unit as a research project guided by an appropriate methodology/methodologies.

Given the relational nature of transdisciplinarity, we recognised that a qualitative rather than quantitative approach was more appropriate at this time. Two methodologies were considered and implemented to varying degrees. These included a case study approach and action research both of which are compatible with the philosophical tenets of transdisciplinarity and the interpretive paradigm. As a case study, the elective provided us with a legitimate exploratory setting bounded sufficiently to possess its own particularities; particularities that it was hoped would shed light on the predisposition of an educational setting to facilitate transdisciplinarity as we defined it.

To maximise understanding of the case, we asked: What aspects reveal the case's uniqueness? To treat the case as an exemplar we asked: What aspects help reveal something about the predisposition of the design educational setting to facilitate transdisciplinarity for design? To evaluate the study, we asked: Which issues help reveal merit and shortcoming? (Stake, 2000, p. 240). With respect to an action research approach, this provided us with an overarching methodology that allowed this case to be understood as the beginning of an ongoing process of research informed curriculum development that has a social rather than just educative agenda. Some of the qualities of action research include: a preparedness to ignore boundaries when they 'restrict effective understanding and action'; a process in which the value of research results are tested through the collaborative involvement of researchers and others involved in the study, where the diversity of experience and capacities within the local group are treated as an opportunity for enriching the

research/action process; a process that is context-centred aiming to solve real-life problems through the integration of theory and practice (Greenwood & Levin, 2000, pp. 94-96).

During the implementation of the elective, we tape recorded (with the students' permission) group as well as individual tutorials. At the end of the semester, we also tape recorded a focus group session that invited students to critique the elective in terms of what they understood they had achieved and if it were offered again the changes they would like to see. The students' submissions including a project diary recording their process and reflections are also understood as data and for this paper were used to respond to the three questions referred to previously; this latter aspect forming the bases of our analytical approach in the study. To reiterate, our objective in writing this paper was to provide some preliminary insight into how transdisciplinarity incorporating transdisciplinary attitudes might be fostered and more effectively engendered in the design educational context.

Findings of the project

What aspects of the project reveal the case's uniqueness?

As described previously, this studio was different to other cross-disciplinary studios in having students from interior design and architecture work side-by-side on the same project rather than in teams. Asking students to cross disciplinary boundaries produced more emotional angst than perhaps we were prepared for. In the case of the interior design students, this was manifested as frustration with having only a very basic understanding of domestic construction methods and building materials. This was particularly evident in those tutorials where the focus was on spatial differentiation, the relationship of the beach house to its context, and on external building form and materiality. Some found an external view and formal driven process at philosophical odds with an 'interior' place making approach that commenced with the lived experience of the occupants and of the qualities needed in the environment to support this experience. Their discomfort was heightened by their decision to start anew rather than using the existing form of the building previously developed for the client; a decision based on a strong dissatisfaction with the climatic orientation of the proposed building. The frustration was alleviated somewhat when after developing rapport with the architecture students they felt secure in discussing their proposals and inviting comments and suggestions. It also enabled them to see that a couple of the architecture students were experiencing similar frustrations although in general the architecture students did tend to be more confident in this area, particularly those in the later years of their course.

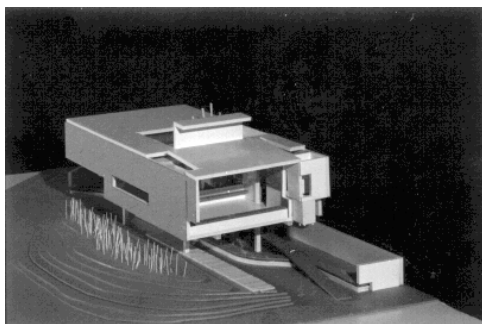
The decision to give students the choice to work within the constraints of the initial proposal or to 'start from scratch' was another unique feature of the studio; one presenting students with an interesting dilemma. For the interior design students, it meant that they could choose to work in a more conventional way focusing on the interior environment. For the architecture students, it meant that they also could give more emphasis to interior quality or 'the nitty gritty' as it was described. As indicated previously, all interior design students elected to set the initial proposal aside revealing preparedness to move beyond their discipline boundary despite the emotional angst. 'I was really surprised. I just thought you would be less inclined to change the plan' (An architecture student speaking to interior design students). In

this respect however, all students believed that they would not have come up with the outcome they did had they not had the initial proposal which through its materiality and form, particularly the ramp entry, helped them to challenge the stereotypical notions of the Australian beach house as a light-weight structure. Unfortunately, as discussed, they did not tend to go much beyond this in their 'redefinition'. As one interior design student commented: 'It became more about the sculpture of the building rather than what it is like to live in'.

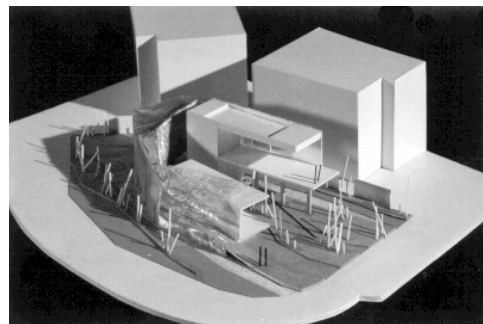
While the architecture students experienced a reluctance and difficulty in employing an interior experientially driven approach, they initially seemed less concerned with this and tended to revert to their usual way of designing. In general, they focused on interior elements after they had developed the compositional arrangement and circulation of the building, and because the formal development took up most of the semester the interior environment was not fully developed by the submission date. As one architectural student stated: 'I thought the focus of the elective was to get to the nitty gritty and I am so not there'. Having said this, they did try to compensate for this in their oral presentation by highlighting the emotive aspects of entry to and journey through the house: 'Entering through the entry wall is small and humbling, yet this changes after passing through and the entire space opens up into a grand volume. The enormous void to the external world open [sic] up like a stage curtain, so as to unfold the drama of the landscape. One is aware that the wall to the perimeter of the space is habitable. This wall offers a space to sit, relax and enjoy the drama of the coastal landscape' (Architecture student). Another architecture student even questioned the requirement to produce a model of the building suggesting a resentment of its focus on the exterior of the building.

What aspects of the case help reveal something about transdisciplinarity in the design educational context?

For the most part, the interior design students tended to work iteratively between the inside and outside and while their building form was generally not quite as resolved as the architecture students (Figures 7 and 8) they more consistently considered the interior as they did the experiential and psycho-social qualities of the building and site as a whole. Figure 9 shows the placement by an interior design student of a drying rack at the under-croft entrance of the building. Not only is this intended to be functional providing a convenient drying place for beach towels, it also doubles as a flag mast reinforcing the beach house theme as well as signalling when someone is home (Figure 9).

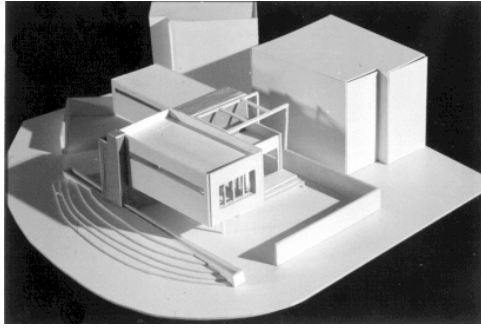


(a)

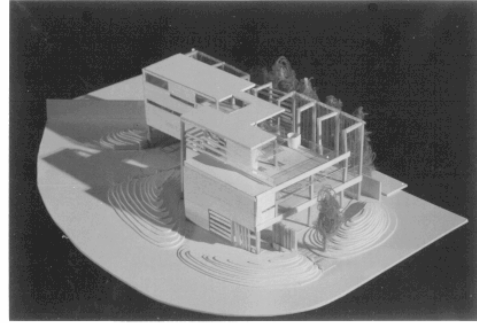


(b)

Figure 7: Selected proposals by architecture students: (a) Joe Adsett; (b) Emma Termont-Schenk.



(a)



(b)

Figure 8: Selected proposals by interior design students: (a) Cushie Pie; (b) Krissy Collum.

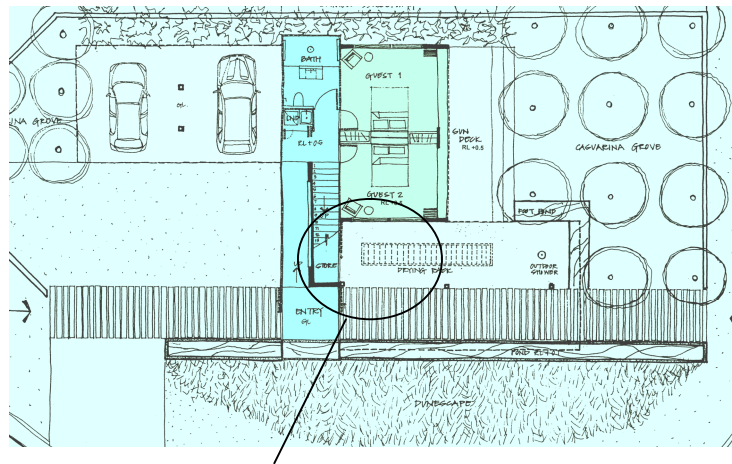


Figure 9(a): Drying rack in the entry foreground (Cushie Pie).

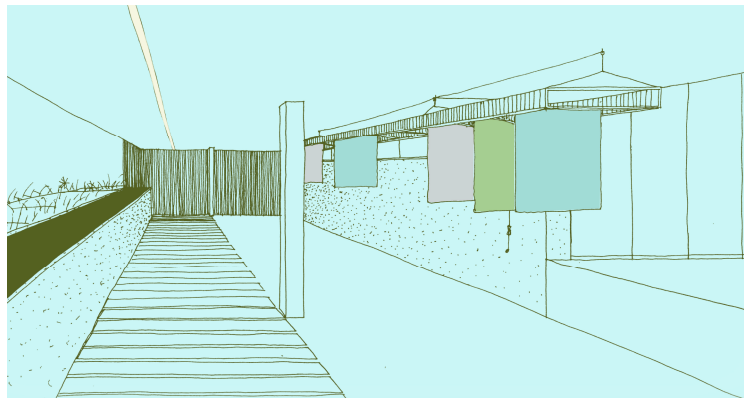


Figure 9(b): Drying rack as flag mast (Cushie Pie).

The use of an overarching concept was instrumental in helping the interior design students achieve this, something which until this class the architecture students claim they had not been introduced to. In her project summary, one of the interior design students describes how she used the concept of tension: 'The main concept driving the scheme is TENSION – between the physical elements themselves and within the different ways of experiencing the building psychologically. This concept stems from the form of the ramps in the original scheme – the tension in ramps inherent in the contradiction of their dynamic scissoring form visually and the slowed and flowing

experiential quality of ascending. The concept [is also based on] the beach experience itself – half energy, action and activity and half sun-soaked sleepy relaxation’. In referring to the interior, she describes how ‘The tension in these types of spaces and experiences [will] challenge how we use and perceive a holiday home, and challenge what a beach house is ‘meant’ to be’. For another interior design student, the concept was about ‘the journey, the destination and making of moments’. In the interpretation of this concept of ‘toward destination’, the student played with the senses contrasting the sense of sensory deprivation experienced in travelling in a car from the city to the beach house with the sense of sensory awakening facilitated through the design of the beach house and its connection to the natural environment.

In the early stages of this paper, we discussed how transdisciplinarity is connected to an overarching framework. The experience of this elective suggests a strong association between this and the use of a concept as an abstract and metaphorical linguistic tool which allows design thinking to transcend the confines of the site and discipline boundaries.

In all, the interior design students gave greater emphasis to the affective quality of the environment; ‘we think about being in the space’ (Interior Design student). This was something applauded by some of the architecture students. They described how the interior design students obviously felt more comfortable using as they described it ‘touchy feely terms’ and lamented that this was not condoned in architecture. The tendency to be more demonstrative affectively was also evident in the presentation drawings of the interior design students which were highly colourful and textural (Figure 10a, b) compared with the less textual, in some cases, black and white drawings of the architecture students. Where the architecture students did use colour this mainly enhanced the formal qualities of the building (Figure 11a, b).



Figure 10(a): Fully coloured section by interior design student highlighting textual quality (Michelle Fielding).



Figure 10(b): Fully coloured elevation by interior design student highlighting textual quality (Michelle Fielding).

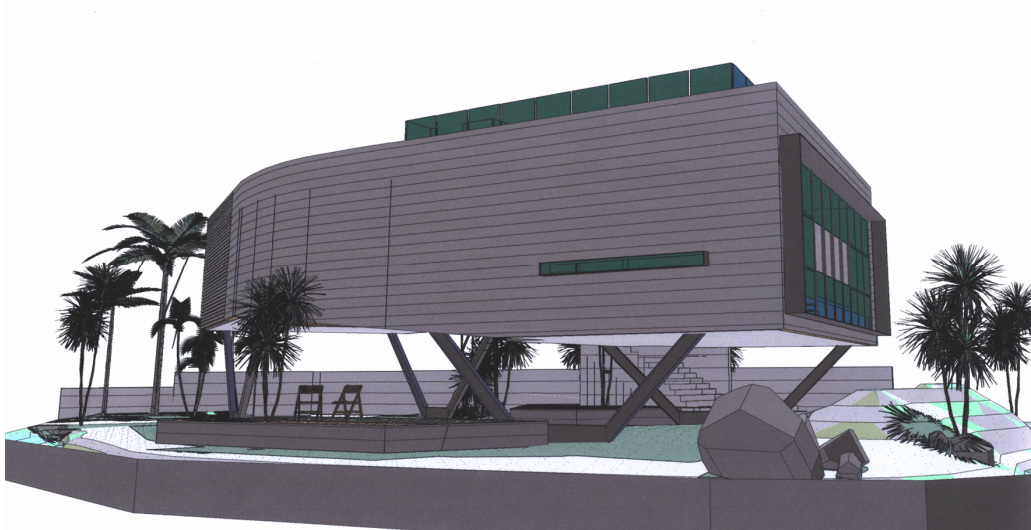


Figure 11(a): Perspective rendering by architectural student (Ben Carson).

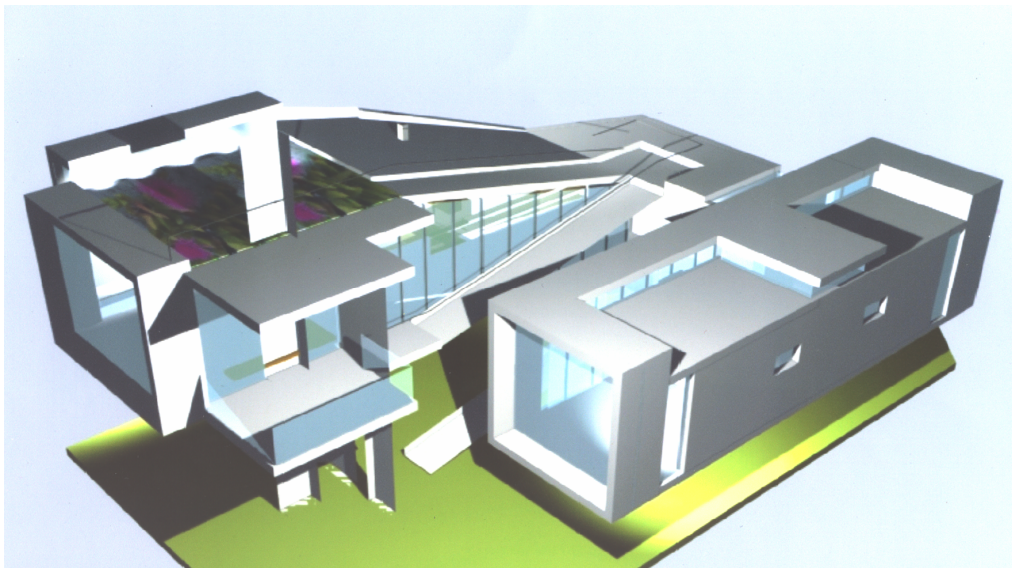


Figure 11(b): Perspective rendering by architectural student (Sandi Kuzman).

Which issues help reveal merit and shortcoming?

The substantive focus of the elective was the redefinition of the Australian beach house. The redefinition aspect was an invitation to students to go beyond discipline constrained stereotypical examples of beach house design in Australia particularly South-East Queensland. A previous section describing the project explains the various philosophical and conceptual ways by which we encouraged students to do this. Despite this, the main challenge made by the students to current beach house design was in terms of the tectonics of their proposals. In most cases, lightweight timber/steel construction was replaced with heavyweight concrete construction which could be justifiably interpreted as the imposition of contemporary architectural urban form on a beach site resulting in very little distinction between the permanency of city

dwelling and the temporality of a beachside weekend dwelling. We suspect this is linked to the perception of a concrete structure as significant to the client (it was after all developed as an initial proposal) as well as the students' reluctance to explore examples at a sufficiently broad theoretical level possibly because they do have that knowledge in the first place.

Developing a transdisciplinary attitude and being able to operate in this way we believe depends on having a broad educational base; a base informed by various theories and perspectives outside the discipline particularly from disciplines such as the humanities and social science. It is interesting to note that the interior design programme has substantially more units that focus exclusively on the psycho-social aspects of design than the architectural programme. In addition, the interior design course is explicitly defined by a critical interpretive understanding of person-environment interaction. It is therefore apparent from this elective that in design studios the project should be situated within society as a whole and explicitly link to overarching themes such as sustainability and person-environment interaction. Even with an emphasis on sustainability few students in the class investigated and incorporated this as fully as they could. Where they did it was generally restricted to climatic considerations and weakened by other decisions that were not sustainable. What was also surprising was the students' insensitivity to the neighbours and how the proposed house would impact on the neighbours' experience of living next door or down the street. This would suggest that students need to be more aware of their social responsibility as designers, also a significant aspect of operating in a transdisciplinary way.

While as noted previously the students recognised the strengths in each discipline, they started to question the need for the two to be separate arguing that all issues should be conceived and addressed with equal emphasis given to the site and the exterior and interior of a building. The interior design students also expressed feeling confused: '...that's part of the problem, we don't know where we really fit'. Despite this however they appreciated the chance to go outside the interior: 'I felt like [previously] I was constrained. The project is more holistic. It has made me think about lot more'. From the students' feedback there was general consensus that the interior design students were more successful in incorporating newly obtained architectural knowledge into their proposal than the architectural students were in incorporating interior design knowledge into theirs. This is supported by comments from the interior design students who stated that they now have a better appreciation of architecture as a result of the elective. The architecture students also stated that they have greater respect for and understanding of interior design and were genuinely surprised by the interior design students' ability.

The comments of the students suggest that there has been some development in terms of multidisciplinary as well as a tenuous movement towards a transdisciplinary understanding of the world and of the role of design in realising this. Overall, it is somewhat ironic that interior design students rather than architecture students displayed a greater disposition and aptitude for this. Architecture is generally regarded as a more generalist encompassing discipline and interior design as a more specialist discipline operating within the confines of a structure's boundary. While this needs to be studied in greater depth, the difference appears to be due in part to a perception of the outcome of mainstream architecture in objective terms (the

building) contrasting with the understanding in interior design of the outcome as experience; experience that is the result of a dialectic process involving people and the environment both of which are conceived in macro as well as micro terms. This observation lends support for the idea of transdisciplinarity as being tied to the issue and its context and, subsequently of the redundancy of the design disciplines as they are currently defined.

In terms of further projects of this nature, we will be much more aware of how the same terms can have different meanings for different disciplines even if they are closely allied as well as of the need to frame the project in a way that demands and encourages greater movement beyond the representative disciplines to the issue at hand. Associated with this will be more reliance on abstraction and less reliance on conventional norms and practices of the disciplines including the usual modes of representation and presentation. Having said this, the projects should be designed to align with society and its multidimensional quality, and should be conducted, as we have in this case, with small groups of students to facilitate one to one as well as group interaction.

Conclusion

In this paper, we have described the development, implementation and evaluation of a design studio elective comprising architecture and interior design students working side-by-side on the same project producing their own individual proposal. While we recognised the need for students to learn how to work in a team, we were more concerned in this case with providing them with an opportunity to develop a better appreciation of the holistic nature of design 'problems' and, hopefully in so doing, be more predisposed as students and graduates to operate in transdisciplinary ways. To facilitate this, we drew upon the long history of collaboration and good working relationships between the architect and the interior designer while at the same time realising that the resources a contemporary designer can draw upon are no longer closed bodies of knowledge.

The preliminary evaluation of the elective undertaken to date suggests that the elective was successful in engendering a transdisciplinary attitude characterised by a holistic appreciation of the world and associated design issues although improvements could be made to the unit and to design courses in general to further facilitate this. Understanding the commonality across the design disciplines also will, we believe, lead to a better appreciation of design in general and of its potential to contribute in transdisciplinary ways. Correspondingly, understanding the distinctive qualities of the design disciplines will provide opportunities for challenging discipline viewpoints in the process strengthening each discipline's contribution to a holistic appreciation of the world.

In conclusion, we see our role as professors in encouraging open communication between and beyond the different fields and facilitating such transdisciplinary design and research processes which can result in a more diverse student experience, increased student motivation, and new design awareness.

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